

## Catalogue of American Amphibians and Reptiles.

TILLEY, STEPHEN G. 1985. *Desmognathus imitator*.***Desmognathus imitator*  
Imitator salamander***Desmognathus ochrophaea carolinensis* Dunn, 1916:74 (Part).

Type-locality, "... spring near top of Mt. Mitchell, North Carolina, altitude over 6500 feet." Holotype, an adult male, collected October 5, 1902 by H. H. Brimley and F. Sherman, Jr., U.S. Nat. Mus. 31135, examined by author.

*Desmognathus ochrophaeus carolinensis*: Stejneger and Barbour, 1917:23. Emendation.*Desmognathus fuscus carolinensis*: Pope, 1924:4. Transfer of *D. o. carolinensis* to *D. fuscus*.*Desmognathus fuscus imitator* Dunn, 1927:84. Type-locality, "Indian Pass, Great Smoky Mts., N.C." Holotype collected by J.E. Benedict, Jr., June, 1927, U.S. Nat. Mus. 72762, not examined by author. Synonymized with *D. f. carolinensis* by Pope (1928).*Desmognathus aureatagulus* Weller, 1930:3 page unnumbered (=p. 41). Type-locality, "... trail between Newfound Gap and Indian Pass, altitude 4400-5000 ft." Holotype collected by R. Dury, W. Wyss, A. Loring, S. Loring, and W. H. Weller, June 26, 1930, Cincinnati Museum of Natural History 656, not examined by author. Synonymized with *D. f. imitator* by Weller (1931).*Desmognathus ochrophaeus*: Martof and Rose, 1963:424. Suppression of *carolinensis* to synonymy under *D. ochrophaeus* Cope (1859).*Desmognathus imitator*: Tilley et al. 1978. Elevation to species status.

- CONTENT. *Desmognathus imitator* is a monotypic species.

- DIAGNOSIS. A medium sized (females to 50 mm, males to 57 mm SVL at the type-locality), round-tailed, gray-bellied *Desmognathus* endemic to the Great Smoky and adjacent Balsam and Plott Balsam Mountains of eastern Tennessee and western North Carolina. Specimens from outside these mountain ranges are assignable to *Desmognathus ochrophaeus* if they satisfy the diagnostic criteria given by Tilley (1973) for that form. *Desmognathus imitator* and *D. ochrophaeus* are extremely similar morphologically but very different electrophoretically. *D. ochrophaeus* esterase zymograms exhibit a "trailing band" at the *Est-2* locus of Tilley et al. (1978) which *D. imitator* lacks, and the two species have different electrophores at this and several other loci (see Tilley et al., 1978).

*D. imitator* sympatric with red-cheeked populations of *Plethodon jordani* are often polymorphic for yellow, orange, or red cheek patches, which sympatric *D. ochrophaeus* lack. Colored cheeks do occur, however, in certain *D. ochrophaeus* populations allopatric with *D. imitator* (Tilley et al., 1978). *D. ochrophaeus* sympatric with *D. imitator* normally have distinct, relatively straight dorsolateral bands. The more variable dorsal pattern of *D. imitator* typically consists of strongly undulating, often interrupted dorsolateral stripes. At the type-locality of *D. imitator* and to the southwest along the main ridgecrest of the Great Smokies the two species are readily distinguished via cheek and dorsal coloration. At other localities lack of colored cheeks in *D. imitator*, more variable coloration in *D. ochrophaeus*, and ontogenetic darkening in both species results in specimens, particularly old adults, which cannot be identified without electrophoretic analysis.

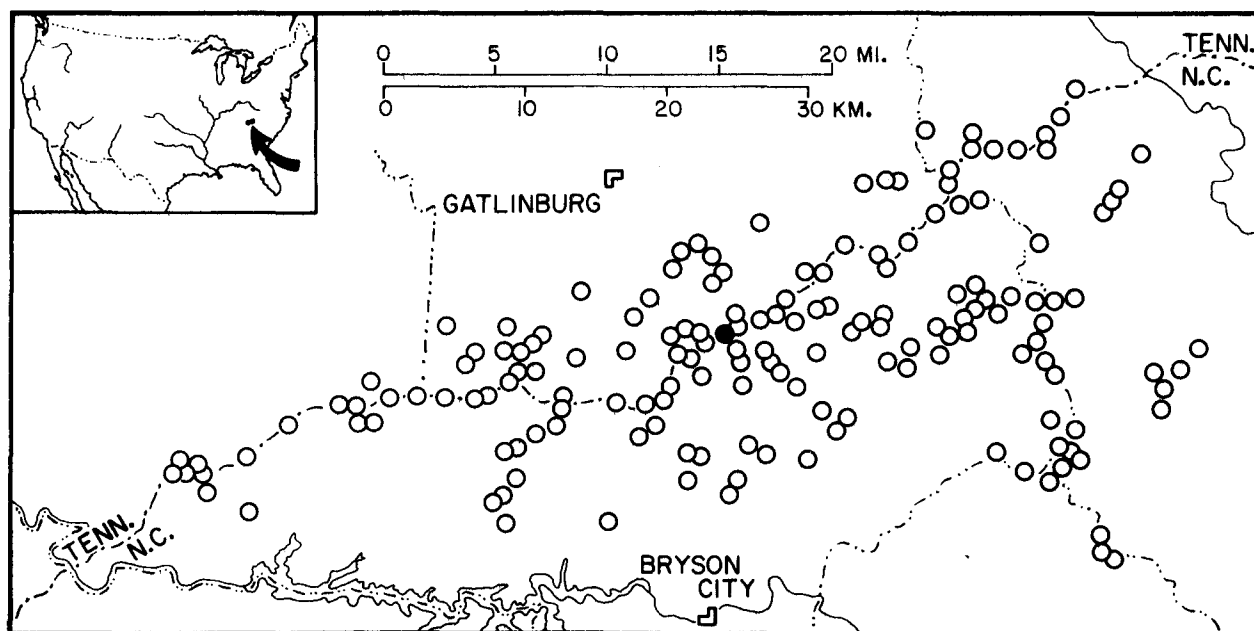
- DESCRIPTIONS. Dunn (1927) and Tilley et al. (1978) compared the species to sympatric and allopatric *D. ochrophaeus*. Brief descriptions of adult *D. imitator* are given in Behler and King (1979) and Martof et al. (1980).

- ILLUSTRATIONS. Tilley et al. (1978) provide black and white photographs of series of adult and juvenile *D. imitator* and sympatric *D. ochrophaeus* from Indian Gap and Spruce Mountain in the Great Smokies, and photographs of esterase and isocitrate dehydrogenase zymograms of the two species. Behler and King (1979) and Martof et al. (1980) provide color photographs of adults.

- DISTRIBUTION. *Desmognathus imitator* is distributed throughout the Great Smoky Mountains from about 900 m to the highest elevations at Clingman's Dome (2024 m) and Mt. Leconte (2010 m). Two low elevation (ca. 550 m) Tennessee records mapped by Tilley et al. (1978) on the boundary of Great Smoky Mtns. National Park near Whiteoak Sink and S of Caton's Grove were based on specimens of *Desmognathus fuscus*. The range of *Desmognathus imitator* is now known to extend along Balsam Mountain to Waterrock Knob (where Tilley et al., 1978 state that it is absent) and at least as far as a wet rockface near blue Ridge Parkway milepost 450. The species occurs in small streams and seepage areas, in leaf litter and under surface objects on the forest floor, and on wet rockfaces (see COMMENT).

- FOSSIL RECORD. None.

- PERTINENT LITERATURE. Dunn (1927) correctly described the correlated cheek and dorsal coloration characters that distinguish many specimens from sympatric *D. ochrophaeus*. Pope (1928), noted polymorphisms for these traits in *D. ochrophaeus* populations outside the Great Smokies, assumed Dunn's cheek and dorsal pat-



MAP. Solid circle indicates type-locality; open circles indicate other localities.

tern characters similarly represented morphs of a single species, and relegated *D. imitator* to synonymy with *D. ochrophaeus*. Weller (1930) described the yellow-cheeked morph as *D. aureatagulus*, but then (1931) reduced the form to a synonym of *D. fuscus imitator*. Tilley et al. (1978) showed electrophoretically that *D. imitator* and sympatric *D. ochrophaeus* were reproductively isolated, and elevated *D. imitator* to species status. They also discussed its distribution, geographic variation, ecology, and evolutionary relationships. Several papers (Orr, 1962, 1967, 1968; Huheey, 1960, 1966; Brodie and Howard, 1973) on mimicry between red-cheeked *Desmognathus* and *Plethodon jordani* deal with red-cheeked *Desmognathus* populations from the Great Smokies which were certainly *D. imitator*. Other works on the distribution, ecology, and systematics of Great Smoky Mountain salamanders that treat *D. imitator* as a synonym of *D. ochrophaeus* are King (1939), Martof and Rose (1963), Huheey and Stupka (1967), and Tilley (1969, 1973).

• **ETYMOLOGY.** The name *imitator* alludes to the resemblance between red-cheeked specimens and similarly patterned, sympatric *Plethodon jordani*.

#### COMMENT

*Desmognathus imitator* and *D. ochrophaeus* co-occur on wet rockfaces at Bunches Bald along the Blue Ridge Parkway, along the Parkway Extension 2.25 km S of Paul's (Polls) Gap on Balsam Mountain, and on the Blue Ridge Parkway on Waterrock Knob. *D. imitator* is the more abundant species at these localities. The Bunches Bald and Paul's Gap *D. imitator* populations show the same tendencies toward small body size and light pigmentation noted in rockface *D. ochrophaeus* populations by Huheey and Brandon (1973), and also lack colored cheeks. *D. imitator* populations on Waterrock Knob are phenotypically even more distinctive. Their dorsal patterns consist of strongly undulating, often interrupted dorsolateral stripes, and the paired, dorsal "larval spots" (see Tilley, 1969) remain prominent in adults. Specimens appear greenish dorsally and yellowish ventrolaterally and there is remarkably little intrapopulation variation in color pattern. As distinctive as all these rockface populations are, they are electrophoretically virtually identical to *D. imitator* at the type-locality and elsewhere in the Great Smokies. Description of larval *D. imitator* must await the collection of egg clutches or hatchlings together with attending females. I have found several clutches of either *D. imitator* or *D. ochrophaeus* in the Great Smokies. In each case the clutch was attached to a rock beneath the surface of a small stream or seepage area, and the attending female escaped before she could be identified. Surface brooding sites of the type utilized by *D. ochrophaeus* in other mountain ranges are occupied by brooding female *D. sanctelahi* in the Great Smokies (Tilley et al., 1978).

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